**HW ANSWERS p. 434**

**16)** p = 0.30 n = 100

(a)

**STATE** **CHECK**

(1) SRS stated

(2) np > 10 (100)(0.30) > 10

nq > 10 (100)(0.70) > 10

(3) pop > 10n over 1000 people wear contacts

Conditions met 🡪 N(0.30, 0.0458)

(b) P( > 1/3)= normalcdf(0.3333, E99, 0.30, 0.0458) = 0.2336

**20)** p = 0.44 n=244

**STATE CHECK**

(1) SRS assumed representative

(2) np > 10 (244)(0.44) > 10

nq > 10 (244)(0.56) > 10

(3) pop > 10n there are more than 2440 binge drinkers

N(0.44, 0.03)

P( < 0.3934) = normalcdf(-E99, 0.3934, 0.44, 0.03) = 0.0602

This sample only happens about 6% of the time. That is unusual.

**22)** p = 0.92 n = 160

**STATE CHECK**

(1) SRS assumed representative

(2) np > 10 (160)(0.92) > 10

nq > 10 (160)(0.08) > 10

(3) pop > 10n there are more than 1600 seeds

N(0.92, 0.02145)

P( > 0.95) = normalcdf(0.95, E99, 0.92, 0.02145) = 0.081

**38)** N(35.4, 4.2)

(a) P(X > 40) = normalcdf(40, E99, 35.4, 4.2) = 0.1367

(b) P(X < A) = 0.20 A = invnorm(0.20, 35.4, 4.2) = 31.87 inches

(c) n = 4

**STATE**  **CHECK**

1) SRS - assumed representative

2) n > 30 or norm pop. - stated normal pop

3) pop > 10(*n*) - all years with rain in Ithaca > 40

N(35.4, 2.1)

(d) P( < 30) = normalcdf(-E99, 30, 35.4, 2.1) = 0.0051

**48)** N(10.2, 0.12)

(a) P(X < 10) = normalcdf(-E99, 10, 10.2, 0.12) = 0.0478

(b) P(underweight) = 0.0478 P(underweightc) = 0.9522

P(Uc ∩Uc ∩Uc) = (0.9522)(0.9522)(0.9522)= 0.8633

(c) n = 3

**STATE**  **CHECK**

1) SRS - assumed representative

2) n > 30 or normal pop - stated normal population

3) pop > 10(*n*) - total # potato chip bags > 30

N(10.2, 0.0693)

P( < 10) = normalcdf(-E99, 10, 10.2, 0.0693) = 0.00195

(d) n = 24 checks still pass from before

N(10.2, 0.0245)

P( < 10) = normalcdf(-E99, 10, 10.2, 0.0245) = 0